ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

031 600 AHO

DATE: December 3, 1984

TO: Miles A. Zamco, Manager, FOS, DAPC

FROM: Frederick L. Smith

SUBJECT: Stack Test to Determine Hydrocarbon Emissions From a Gas Fired Boiler Burning Para-Cresol Pitch as a Supplemental Fuel: 031 600 AHO
F.O.S Section

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Stack tests were conducted by Almega Corporation to determine organic emissions from a gas fired boiler burning para-cresol pitch waste products as a supplemental fuel. Boiler No. 2, an Edgemoor chain grate stoker, which was converted to gas in 1963, was used to dispose of the para-cresol according to a temporary permit issued October 16, 1984 and expires February 15, 1985. Boiler No. 2 has three fuel jets. Two jets feed gas to the boiler and one jet feeds para-cresol, not to exceed 3.3 gpm. The boiler operated at approximately 65,000 to 67,500 pounds of 600 psi steam per hour. Seventy thousand pounds of steam is the rated capacity. Natural gas burned was monitored as was para-cresol burned as well as other boiler operating parameters. These figures will be included in the final report.

The sampling location is a rectangular duct 66" X 70" in size. The duct has five port holes. Each port had five sampling points and each point was sampled for six minutes. Thus, each test had 25 sampling points and required 2.5 hours of sampling time. Stack temperatures ranged from 460°F to 470°F, ΔP is about 0.10 - 0.15 inches H_2O. Moisture content was approximately 14%. This was higher than anticipated. Sample volume was +81.0 acfm.

Testing will be carried out according to a protocol agreed to by Sherwin Williams and the Agency dated October 8, 1984. This protocol calls for three tests using dual XAD-2 traps and one test using methanol as the collecting reagent. See the protocol for more details concerning the sampling. A sketch of the XAD-2 train is attached.

Sampling train validation was conducted on November 26, 1984. An XAD-2 trap was spiked with a known amount of pitch. An extraction was performed and the recovery rate was found to be 66%. This is somewhat low but maybe typical for new XAD-2. Samples were taken in stack also and these were extracted. Results showed that very little of anything passed the 1st XAD-2 trap. Validation results appeared promising to me. I feel the final report will show extremely low levels of organic emissions. Initial destruction efficiency calculated to be 99.985%. We now await the final report.

FLS/gkw/0529A

Sy Levine/Mel Villalobos/Kerry Keller
Bharat Mathur/Harish Desai

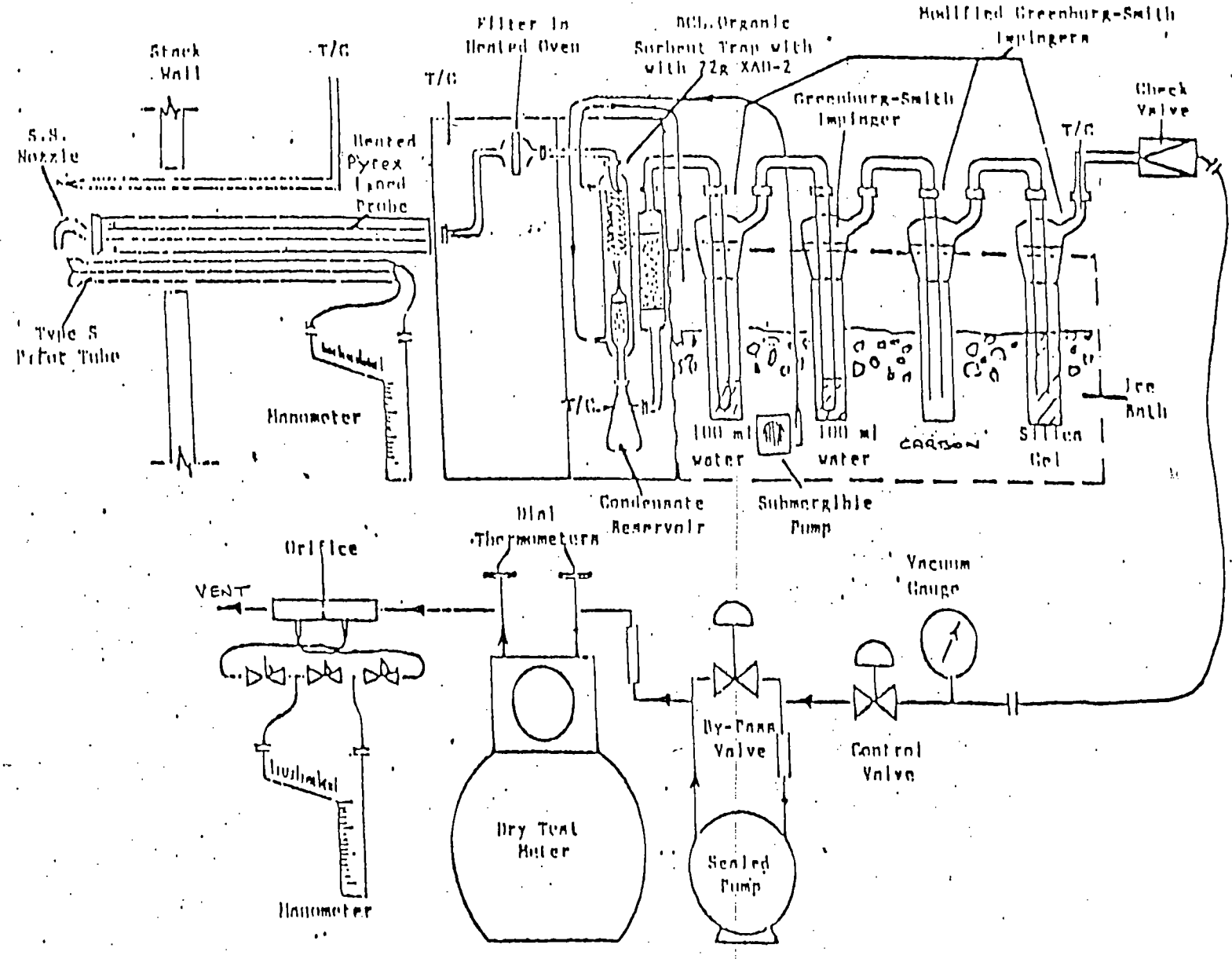

FIGURE 1. MODIFIED METHOD 5 SAMPLING TRAIN.
*T/C-CHROMEL-ALUMEL THERMOCOUPLE.